

**CLAIMS**

1. A reciprocating engine operating on the two stroke cycle, comprising;
  - 5 a pair of stationary and substantially concentrically aligned mutually opposed pistons separated by a sleeve adapted to reciprocate about the pistons, the reciprocating sleeve defining two cavities, each cavity being operatively connected to one of the pistons to define a chamber, the first chamber being a pre-charge chamber and having at least one inlet port, and the second chamber being a combustion chamber and having at least one outlet port, the two chambers being separated by a transfer valve.
  - 10 2. A reciprocating engine as claimed in claim 1, wherein the sleeve is provided with a drive member that is adapted to act upon a track on an output member adjacent to the sleeve, the track defining a path such that when the drive member acts upon the track the reciprocating motion of the sleeve causes rotary motion of the output member.
  - 15 3. A reciprocating engine as claimed in claim 2, wherein the output member comprises a rotatable sleeve adapted to rotate about the reciprocating sleeve.
  4. A reciprocating engine as claimed in any of claims 2 or 3, wherein the output member has a multi-peaked curved track such that it takes more than one complete cycle of the reciprocating sleeve to produce one revolution of the output sleeve.
  - 20 5. A reciprocating engine as claimed in any preceding claim, wherein the transfer valve is pressure operated.
  6. A reciprocating engine as claimed in any preceding claim, wherein the inlet port for the pre-charge chamber is provided with a pressure operated valve.
  - 25 7. A reciprocating engine as claimed in any preceding claim, wherein the outlet port for the combustion chamber comprises a port in the reciprocating sleeve which is so sized and positioned that the port can be closed by a piston during at least part of the travel of the reciprocating sleeve.

8. A reciprocating engine as claimed in any preceding claim, wherein the engine comprises a reciprocating sleeve adapted to reciprocate about two pairs of pre-charge chambers and combustion chambers.
9. A reciprocating engine as claimed in any preceding claim, wherein the engine includes two reciprocating sleeves
- 5 10. A reciprocating engine as claimed in claim 9, wherein the engine is configured such that each reciprocating sleeve operates in a mutually opposing direction to the other.
11. A vehicle or craft incorporating a reciprocating engine substantially as claimed in any one of the preceding claims.